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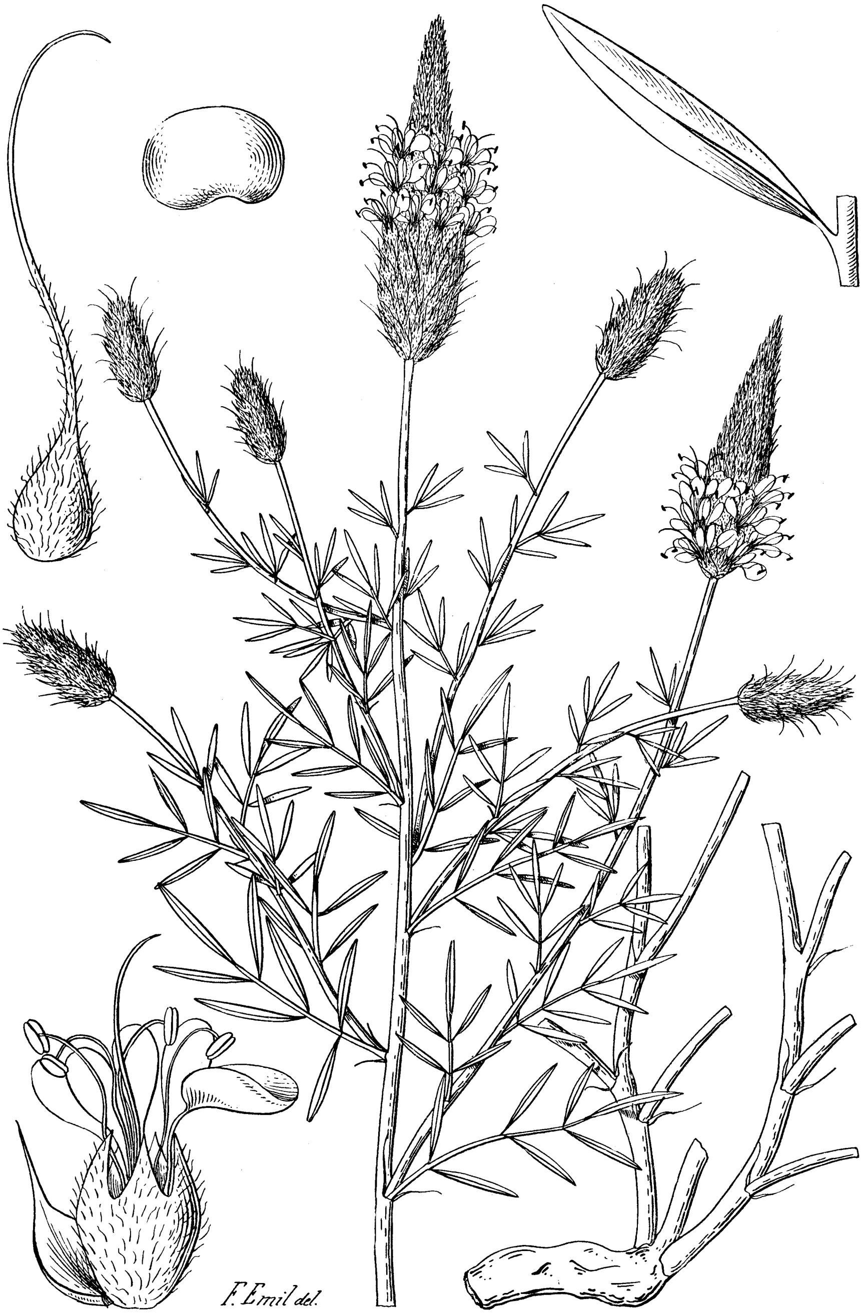

KUHNISTERA GATTINGERI HELLER.

BULLETIN

OF THE

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Notes on Kuhnistera.

By A. A. Heller.

Plate 262.

The genus *Kuhnistera* was published by Lamarck, in Encyclopedie Methodique, 3: 370 (1789), who based it upon the " Kuhniae affinis" or " Anonymos pinnat." of Walter, and gave it the name of *Kuhnistera Carolinensis*, from its resemblance to the genus *Kuhnia* of the Compositae. Walter, who did not know exactly where to place the plant, consigned it to his convenient *Anonymos.*

This in some respects peculiar plant has had an interesting history and a variety of names. Jussieu, in Gen. Pl. 355 (1789), under the description of *Dalea*, adds: "Speciam habeo siccam, habitu flosculosam Eupatorii instar sed Dalea fere congeneram cui calix communis polyphyllus imbricatus multiflorus, calix proprius inferus 5-partitus plumosus, petala 5 subaequalia unguiculata, caetera similia."

This is followed by an observation of Ventenat, in Tab. 3: 395 (1794) under *Kuhnistera Carolinensis*, who says that the plant of which Jussieu gave a short description, after having presented the characters of *Dalea*, is, according to Michaux, this Anonymos of Walter; *Kuhnistera* differs above all from the genera following by the disposition of the flowers in a corymb, by its involucre and by the plumose divisions of the calyx proper. The genera following are *Dalea* and *Psoralea*. The reference to Michaux evidently means that the information was given either verbally or by correspondence, as they were co-workers.

Michaux, in Fl. Bor. Am. **2**: 50 (1803), described the genus *Petalostemum*, taking as types *P. albidum*, *pl. 37*, *f. 1*, and *P. violaceum*, *pl. 37*, *f. 2*. Under it he included *Kuhnistera Carolinensis* Lam., calling it *P. corymbosum*.

Willdenow, in Sp. Pl. 1338 (1803), issued subsequent to Michaux's Flora, places the plant under *Dalea*, and calls it *Dalea Kuhnistera*, taking his characters from Ventenat, the latter clause of whose description reads: "Quodlibet florum, capitulum magnobractearum numero est tectum, quae calycem communem quasi repraesentant et totae plantae habitum Eupatorii conciliant."

Poiret, in Lam., Encycl. **5**: 694 (1804), calls it *Psoralea corymbosa*. After mentioning the corymbose heads, he adds: "They are provided with large oval bracts, scales, almost like an involucre, at the base of the flowers."

Pursh, in Fl. Am. Sept. 462 (1814), takes up the name *Petalostemon corymbosum*, of Michaux, and remarks: "This singular plant appears, at first sight, to belong to the class Syngenesia (Compositae), and certainly is the connecting link between that class and the present."

De Candolle, in Prodr. **2**: 244 (1825), assigns it to a section Kuhnistera, of *Petalostemon*, and asks: "An genus proprium?"

Bartling, in Ord. Nat. Pl. 410 (1830), treats *Kuhnistera* and *Petalostemon*, as separate genera.

Don, in Gen. Syst. **2**: 222 (1832), follows De Candolle, and quotes him throughout.

Torrey and Gray, in Fl. N. Am. **1**: 312 (1838), say, speaking of *Petalostemon corymbosus*: "This species, on account of its habit, its large involucrate bracts, deeply divided and plumose calyx, and narrow petals, has been separated as a distinct genus, but scarcely on sufficient grounds, for several other species have a similar calyx and very narrow petals and in *P. multiflorum* the stem is somewhat corymbosely branched. There is no other species, however, with similar spikes."

Endlicher, in Gen. Pl. 1270 (1840), divides *Petalostemon* into two sections, Eupetalostemon and Kuhnistera.

Lindley, in Veg. King. Ed. 3, 554 (1853), considers *Kuhnistera* and *Petalostemon* as separate genera.

With the idea of finding sufficient characters to separate *Kuhnistera* of Lamarck from *Petalostemon* of Michaux, I have spent some time in hunting up the literature of the subject. As will be seen from the extracts given above, botanists since the time of Michaux who were really acquainted with the plants which they described have maintained but one genus, some of them making a section of *Kuhnistera.*

My own examinations of the different species have failed to establish enough constant differences to separate them into two genera. The plant of Walter is strikingly different in its general appearance from the other species, but the differences are of degree rather than of kind. All of the species have a greater or less number of empty bracts at the base of the flower-head. In *pinnata* these are broadly ovate or almost orbicular, especially the outer row, which usually bears small leaflets. If these outer empty bracts were constant and of a different shape from the inner ones we would have a good character, but they are not. The outermost bracts are almost obicular, the innermost oblong, with a gradual transition from the one to the other, as we proceed from the outside to within.

The narrow petals and slender plumose calyx-lobes can hardly be considered sufficient ground for generic distinction, for as noted by Torrey and Gray we have these conditions in several other species, although no other species has the calyx-lobes so long in proportion to the length of the tube.

Unless better and more constant characters can be found to keep up to distinct genera, the latter name of *Petalostemon* Michaux must give way to *Kuhnistera* of Lamarck, as set forth by Kuntze, in Rev. Gen. Pl. 192 (1891).

The following is a provisional list of the species as known to me at the present time, and is printed preliminary to a descriptive monograph of the genus.

KUHNISTERA Lam. Encycl. 3: 370. 1789.

KUHNISTERA CANDIDA (Michx.) Kuntze, Rev. Gen. Pl. 192. 1891.

Petalostemon candidum Michx. Fl. Bor. Am. 2: 49. 1803.
Dalea candida Poir. in Lam. Encycl. 5: 694. 1804.

Petalostemon virgatum Nees & Schwein., in Neuwied, Reise Nord. Am. **2**: 432. 1839.

A Mississippi Valley species, occurring in Minnesota, Wisconsin, Illinois, Nebraska, Kansas, Kentucky, Tennessee, Mississippi, Louisiana, and in the Saskatchewan region, where it was collected by Bourgeau.

KUHNISTERA CARNEA (Michx.) Kuntze, Rev. Gen. Pl. 192. 1891.

Petalostemum carneum Michx. Fl. Bor. Am. **2**: 49. 1803.

Psoralea carnea Poir. in Lam. Encycl. **5**: 694. 1804.

Dalea carnea Spreng. Syst. **3**: 326. 1826.

Petalostemon roseum Nutt. Amer. Journ. Sci. (I.) **5**: 298. 1822.

Georgia and northern Florida. Nuttall's *P. roseum* does not seem to be distinct from this species.

KUHNISTERA COMPACTA (Spreng.) Kuntze, Rev. Gen. Pl. 192. 1891.

Dalea compacta Spreng. Syst. **3**: 327. 1826.

Petalostemon macrostachyum Torr. Ann. Lyc. N. Y. **2**: 176. 1828.

Petalostemon compactus Swezey, Neb. Fl. Pl. 6. 1891.

Nebraska and Colorado.

KUHNISTERA DECUMBENS (Nutt.) Kuntze, Rev. Gen. Pl. 192. 1891.

Petalostemon decumbens Nutt. Journ. Acad. Phila. **7**: 93. 1834.

Northeastern Texas.

KUHNISTERA EMARGINATA (T. & G.) Kuntze, Rev. Gen. Pl. 192. 1891.

Petalostemon emarginatum T. & G. Fl. N. Am. **1**: 311. 1838.

A Texan species.

KUHNISTERA EXILIS (A. Gray) Kuntze, Rev. Gen. Pl. 192. 1891.

Petalostemon exilis A. Gray, Pl. Wright. **2**: 41. 1893.

New Mexico, Arizona and Mexico. The bracts of this plant are like those of true *Dalea*, but there are only five stamens, having the structure of those of *Kuhnistera*. As stated by Gray in the original description, "The lowest bracts broader and less subulate-pointed than the upper," in this respect having the same character as *K. pinnata*.

KUHNISTERA FEAYI (Chapm.) Nash, Bull. Torr. Club, **22**: 149. 1895.

Petalostemon Feayi Chapm. Fl. States, Suppl. 615. 1884.

Apparently confined to central Florida. It is close to *K. carnea*, but seems to be distinct.

KUHNISTERA FLAVESCENS (S.Wats.) Kuntze, Rev. Gen. Pl. 192. 1891.

Petalostemon flavescens, S. Wats. Amer. Nat. 7: 299. 1873.

KUHNISTERA FOLIOSA (A. Gray) Kuntze, Rev. Gen. Pl. 192. 1891.

Petalostemon foliosus A. Gray, Proc. Amer. Acad. 7: 336. 1868.

Illinois and Tennessee.

KUHNISTERA GATTINGERI n. sp.

Perennial, stems a foot in length or more, usually branching from the base, sometimes decumbent, sparingly glandular and pubescent, sometimes villous on the peduncles; leaflets two or three pairs, narrowly linear or oblong, one-half to three-fourths of an inch long, one line in width or less, dull and glandular on the upper side, light green beneath, the mid-vein prominent; spikes on rather short peduncles, cylindrical, loose, especially when old, one inch to two and a half inches long; bracts slightly longer than the calyx, oval-lanceolate, slender-pointed, glandular, pubescent; calyx pubescent with spreading hairs, the lanceolate lobes slightly shorter than the tube and more pubescent; petals deep rose-purple; ovary and base of style pubescent.

This plant has been distributed as *Petalostemon decumbens* Nutt., but Nuttall's type, collected "on the plains of the Red River," is preserved in the herbarium of Columbia University, and is a very different species. I take pleasure in dedicating it to Dr. A. Gattinger, who first collected it about Nashville and Lavergne, Tenn. Some of his specimens are in Curtiss' North American Plants, no. 565. Dr. Chas. Mohr has also collected it at Russelville, Ala., a form with somewhat laxer inflorescence, and more pubescent calyx.

KUHNISTERA GRACILIS (Nutt.) Kuntze, Rev. Gen. Pl. 192. 1891.

Petalostemon gracile Nutt. Journ. Acad. Phila. 7: 92. 1834.

Petalostemon bicolor Bertol. Bot. Zeit. 9: 902. 1842–51. Fide A. Gray.

A species of the gulf coast extending from Florida to Louisiana. The majority of the plants which are in herbaria labeled *Petalostemon gracile* belong to *K. oligophylla.* True *gracilis* has not been found outside of the range given.

KUHNISTERA GRISEA (T. & G.) Kuntze, Rev. Gen. Pl. 192. 1891.

Petalostemon griseum T. & G. Fl. N. Am. 1: 310. 1838.

Texas and Indian Territory.

Petalostemon luteolus S. Wats., is *P. Sabinalis* S. Wats. Although the name *luteolus* appears in Patterson's Check-List, it has no foundation, being a label name given to a specimen of *P. Sabinalis.*

KUHNISTERA MICROPHYLLA (T. & G.).

Petalostemon phleoides var. *microphyllum* T. & G. Fl. N. Am. 1: 310. 1838.

The much smaller and more numerous leaflets, as well as the pubescence, readily separate this plant from *K. phleoides.*

A Texan species.

KUHNISTERA MULTIFLORA (Nutt.) Heller, Mem. Torr. Club, 5: 197. 1894.

Petalostemon multiflorum Nutt. Journ. Acad. Phila. 7: 92. 1834.

Kuhnistera candida var. *multiflora* Rydberg, Cont. U. S. Nat. Herb. 3: 54. 1895.

The corymbose and capitate inflorescence of this species debar it from being classed with *K. candida.* The ovate bracts, shorter than the calyx, although of lesser importance, do not agree with *candida* either, as shown by Mr. Rydberg's description. There is only one other species in the genus, *K. pinnata,* which is corymbosely branched. I have seen specimens from Kansas, Indian Territory and Texas only.

KUHNISTERA OBOVATA (T. & G.).

Petalostemon obovatum T. & G. Fl. N. Am. 1: 310. 1838.

Dalea agastachya Moric. Pl. Nouv. 65. *pl. 44.* 1839.

Kuhnistera agastachya Kuntze, Rev. Gen. Pl. 192. 1891.

In Mem. Am. Acad. (Plantae Fendlerianae) 4: 33 (1849), Dr. Gray says in a foot note: "*Dalea agastachya* Moric. Pl. Nouv. Amer. *pl. 44* (1839) is *Petalostemon obovatum* T. & G.," thus proving conclusively that *obovatum* is the earlier name. Moricand's work was issued in parts, dating from 1833–46.

A Texan species.

KUHNISTERA OLIGOPHYLLA (Torr.).

Petalostemon gracile var. *oligophyllum* Torr. in Emory's Mil. Rec. 139. 1848.

Kuhnistera occidentalis Heller, Trans. N. Y. Acad. Sci. 14: 33. F. 1895.

Kuhnistera candida var. *occidentalis* Rydberg, Cont. U. S. Nat. Herb. 3: 154. S. 1895.

The Mexican Boundary Survey of Emory having been confused with the work cited above, the identity of this species was only recently established. The type, but unnamed, is in the herbarium of Columbia University. On a small slip of paper pasted upon the sheet is recorded in Torrey's hand "Emory, Sept. 28th, 1846. Valley of Del Norte." By referring to the journal, we find that on September 28, 1846, the expedition was near Albuquerque, New Mexico. Specimens from Arizona, New Mexico, Kansas, Indian Territory and South Dakota are typical, and readily distinguished from *K. candida* by the lax inflorescence, blunt spikes, and smaller, thicker and more obtuse leaflets, but in Nebraska there are some forms which approach *candida.* It has a more western and southwestern range than any other of the white-flowered species. In the lower part of its range, *candida* is not found far from the Mississippi river, and the typical plant is found only from the original region, Tennessee, Illinois and northward.

KUHNISTERA ORNATA (Dougl.) Kuntze, Rev. Gen. Pl. 192. 1891.

Petalostemon ornatus Dougl. ; Hook. Fl. Bor. Am. 1 : 138. 1830.

Dalea ornata Eaton & Wright, 219. 1840.

Petalostemon macrostachys T. & G. Fl. N. Am. 1 : 309. In part. 1838.

An Oregon species.

KUHNISTERA PHLEOIDES (T. & G.) Kuntze, Rev. Gen. Pl. 182. 1891.

Petalostemon phleoides T. & G. Fl. N. Am. 1 : 310. 1838.

Petalostemon glandulosus Coult. & Fish. Bot. Gaz. **18**: 299. 1893.

A comparison of the type of *phleoides* and a duplicate type of *glandulosus,* both of which are in the Columbia University herbarium, clearly shows them to be identical. The oblique calyx is a marked character in this species.

Texas.

KUHNISTERA PINNATA (Walt.) Kuntze, Rev. Gen. Pl. 192. 1891.

Anonymos pinnat. Walt. Fl. Car. 103. 1788.

Kuhnistera Carolinensis Lam. Encycl. 3 : 370. 1789.

Petalostemum corymbosum Michx. Fl. Bor. Am. 2 : 50. 1803.

Dalea Kuhnistera Willd. Sp. pl. **3**: 1337. 1803.

Psoralea corymbosa Poir. in Lam. Encycl. **5**: 694. 1804.

Cylipogon virgatum Raf. Journ. Phys. **89**: 97. 1819.

Gatesia Alabamensis Bertol. Bot. Zeit. 899. 1842–51.

In the coast region from North Carolina to Alabama.

KUHNISTERA PULCHERRIMA Heller, Cont. Herb. F. & M. Coll. **1**: 50. *pl.* 2. 1895.

Petalostemon virgatum Scheele, Linnaea, **21**: 401. 1848. Not Nees, 1839.

North central Texas.

KUHNISTERA PURPUREA (Vent.) MacM. Met. Minn. Val. 32. 1892.

Dalea purpurea Vent. Hort. Cels. *pl.* 40. 1800.

Petalostemum purpureum Michx. Fl. Bor. Am. **2**: 50. *pl. 37. f. 2.* 1803.

Dalea violacea Willd. Sp. Pl. **3**: 1337. 1803.

Psoralea purpurea Poir. in Lam. Encycl. **5**: 694. 1804.

Northwest Territory, Saskatchewan, Dakota, Minnesota, Nebraska, Illinois, Missouri, Kansas and Arkansas.

KUHNISTERA REVERCHONI (S. Wats.).

Petalostemon Reverchoni S. Wats. Proc. Am. Acad. **21**: 449. 1886.

A species of northern Texas.

KUHNISTERA SABINALIS (S. Wats.).

Petalostemon Sabinalis S. Wats. Proc. Am. Acad. **21**: 448. 1886.

Bandera County, southwestern Texas.

KUHNISTERA SEARLSIAE (A.Gray) Kuntze, Rev. Gen. Pl. 192. 1891.

Petalostemon Searlsiae A. Gray, Proc. Am. Acad. **8**: 380. 1873.

Nevada, the original locality, and Arizona.

KUHNISTERA TENUIFOLIA (A. Gray) Kuntze, Rev. Gen. Pl. 192. 1891.

Petalostemon tenuifolius A. Gray, Proc. Am. Acad. **11**: 73. 1876.

Arkansas, New Mexico, Arizona.

KUHNISTERA TENUIS (Coulter).

Petalostemon violaceus var. *tenuis* Coulter, Cont. U. S. Nat. Herb. **1**: 34. 1890.

This is a very good species, quite distinct from the *Petalostemon violaceus*, which has been made dumping ground of various red-flowered species which are not at all related to it. This species is much more closely related to *Reverchoni* than to *purpurea.*

Coleman county, southeastern Texas.

KUHNISTERA VILLOSA (Nutt.) Kuntze, Rev. Gen. Pl. 192. 1891.
Petalostemon villosum Nutt. Gen. 2: 85. 1818.
Dalea villosa Spreng. Syst. 3: 326. 1826.
Sackatchewan, Minnesota, South Dakota, Nebraska, Kansas.

Studies in the Botany of the Southeastern United States.—V.

By John K. Small.

ASPLENIUM BRADLEYI D. C. Eaton, Bull. Torr. Club, 6: 11. 1873.

Although not extending the known geographic area, King's and Crowder's mountains, N. C., furnish two more stations for this rare fern. I found it on the two isolated peaks just mentioned, in th summer of 1894; it grew both on the cliffs at the summits and in crevices on large boulders on the slopes and at the base of the mountains. The leaves varied from less than one decimeter to between two and three decimeters in length.

PIAROPUS CRASSIPES (Mart.) Britton, Ann. N. Y. Acad. Sci. 7: 241. 1893.

Mr. A. H. Curtiss informs me that this plant escaped from cultivation a few years ago and has now become a serious obstruction to navigation in the tributaries of the St. John's river. It has established itself in other parts of Florida.

IRIS CAROLINIANA S. Wats. in A. Gray, Man. Ed. 6, 514. 1890.

In the spring of 1893 great quantities of this lately described *Iris* were found east of the great Dismal Swamp in Virginia by Dr. Britton and myself. During the spring of 1894 Tracy and Earle secured good fruiting specimens at Pointe du Chene, Louisiana (no. 2898), and last summer I found it very common in the swamps about Macon, Georgia, and throughout the middle part of that state.